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*Abstract of the Disclosure*

A method of controlling the amount of magnetostriction in a magnetostrictive actuator is provided. The method compensates for non-ideal influences, such as imperfections in the magnetostrictive member, prestress, stress or load, quality of the magnetic circuit, and temperature. The method includes selectively energizing the coil to build and maintain a current for generating the magnetizing force; measuring the magnetic flux; and applying the magnetic flux as a feedback variable to control the magnetizing force and thereby control the amount of magnetostriction.